

Features

- TrenchFET Power MOSFET
- Load Switch for Portable Devices
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

N-Channel MOSFET

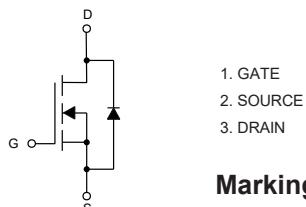
Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 357°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current-Continuous	I_D	5.0	A
Source-Dra in Diode Current-Continuous	I_S	1.04	A
Power Dissipation	P_D	1.25	W

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

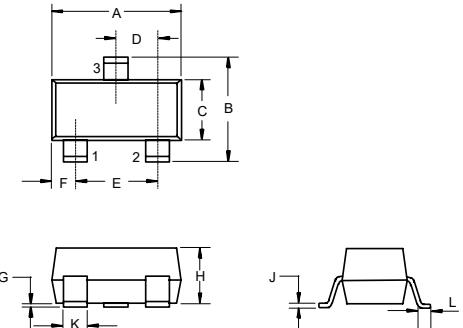
Internal Structure



Marking: S12

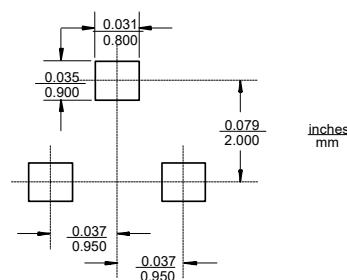
Rev. 3-5-03252021

SOT-23



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	20			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45		1.0	V
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Drain-Source On-Resistance ^(Note 2)	R _{DS(on)}	V _{GS} =4.5V, I _D =5.0A			31.8	mΩ
		V _{GS} =2.5V, I _D =4.7A			35.6	
		V _{GS} =1.8V, I _D =4.3A			41.4	
Forward Transconductance ^(Note 2)	g _{FS}	V _{DS} =10V, I _D =5.0A	6.0			S
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =4A		0.75	1.2	V

Dynamic Characteristics^(Note 3)

Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz		865		pF
Output Capacitance	C _{oss}			105		
Reverse Transfer Capacitance	C _{rss}			55		
Gate resistance	R _g	f=1MHz	0.5		4.8	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, R _L =2.2Ω, V _{GEN} =5V, I _D =4A, R _G =1Ω			10	ns
Turn-On Rise Time	t _r				20	
Turn-Off Delay Time	t _{d(off)}				32	
Turn-Off Fall Time	t _f				12	

Notes:

2. Pulse Test: Pulse Width≤300μA, Duty Cycle≤2%.
3. These parameters have no way to verify.

Curve Characteristics

Fig. 1 - Output Characteristics

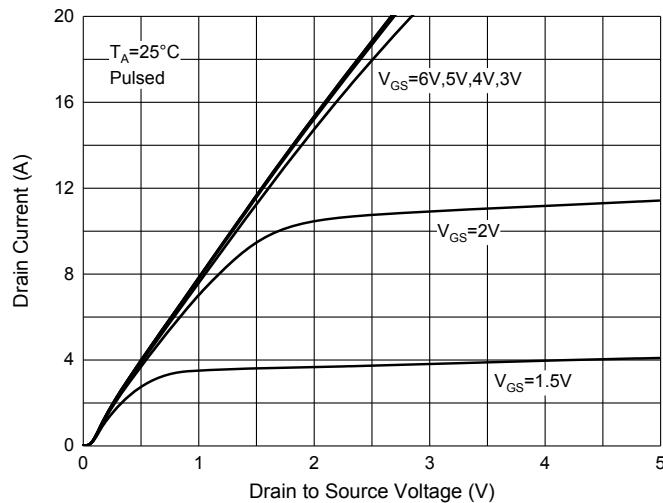


Fig. 2 - Transfer Characteristics

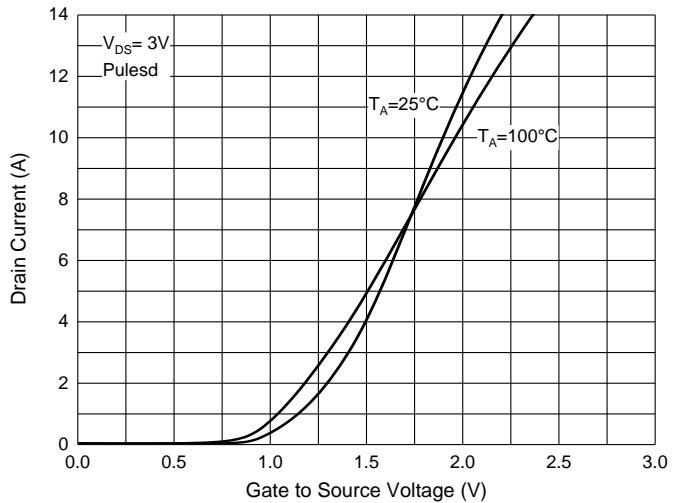


Fig. 3 - $R_{DS(ON)} - I_D$

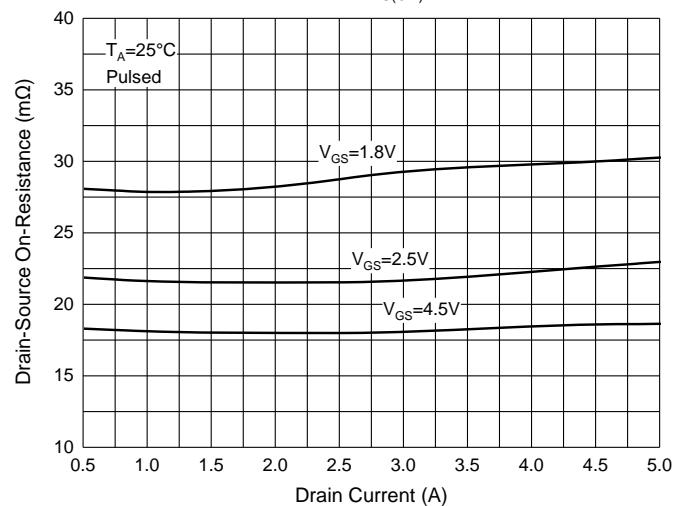


Fig. 4 - $R_{DS(ON)} - V_{GS}$

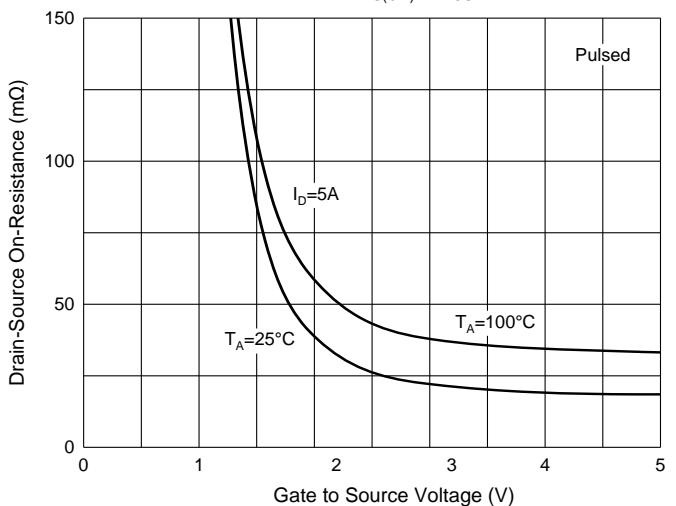


Fig. 5 - Threshold Voltage

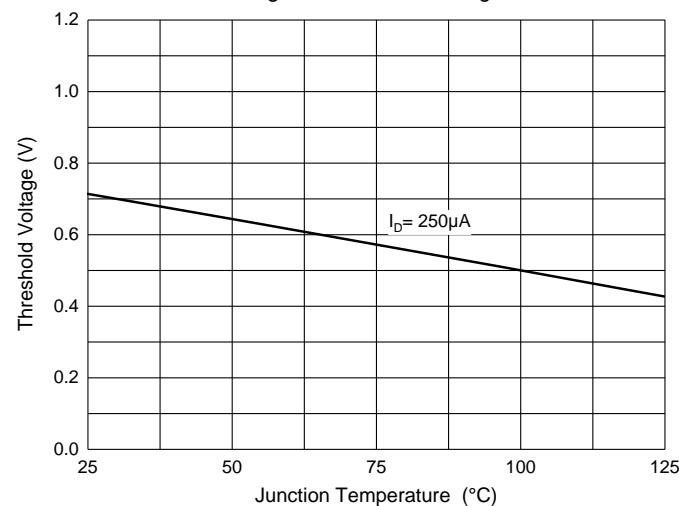
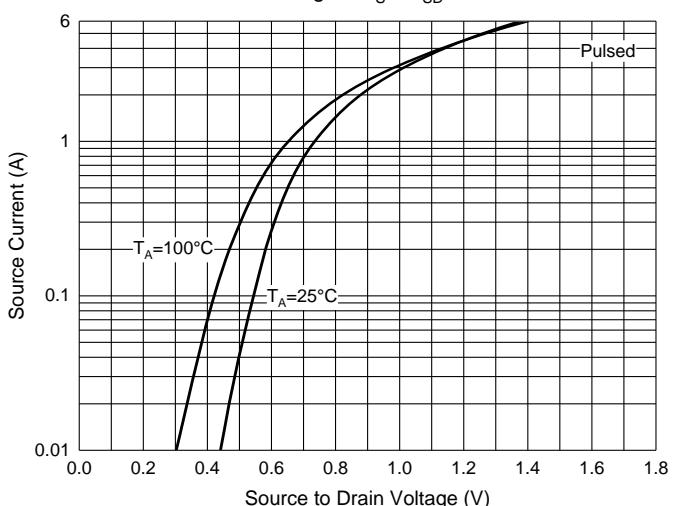


Fig. 6 - $I_S - V_{SD}$



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

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